Interview Summary	**Application No.** 09/678,652	**Applicant(s)** OSHIDA ET AL.	
	Examiner Bradley L. Sisson	**Art Unit** 1634	

All participants (applicant, applicant's representative, PTO personnel):

(1) *Bradley L. Sisson*. (3)_____.

(2) *Paul J. Skwierawski, Red. No. 32,173*. (4)_____.

Date of Interview: *15 November 2006*.

Type: a)☒ Telephonic b)☐ Video Conference
c)☐ Personal [copy given to: 1)☐ applicant 2)☐ applicant's representative]

Exhibit shown or demonstration conducted: d)☒ Yes e)☐ No.
If Yes, brief description: *Proposed amendment to the claims submitted via email November 14, 2006 and November 15, 2006*.

Claim(s) discussed: *3 and 22*.

Identification of prior art discussed: _____.

Agreement with respect to the claims f)☒ was reached. g)☐ was not reached. h)☐ N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: *Mr. Skwierawski authorized an examiner's amendment whereby the title would be amended so to reflect that there is no apparatus being claimed, and where the proposed claims of November 15, would be entered.* .

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN A NON-EXTENDABLE PERIOD OF THE LONGER OF ONE MONTH OR THIRTY DAYS FROM THIS INTERVIEW DATE, OR THE MAILING DATE OF THIS INTERVIEW SUMMARY FORM, WHICHEVER IS LATER, TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.

Examiner Note: You must sign this form unless it is an Attachment to a signed Office action.

B. L. Sisson
Examiner's signature, if required

Summary of Record of Interview Requirements

Manual of Patent Examining Procedure (MPEP), Section 713.04, Substance of Interview Must be Made of Record
A complete written statement as to the substance of any face-to-face, video conference, or telephone interview with regard to an application must be made of record in the application whether or not an agreement with the examiner was reached at the interview.

Title 37 Code of Federal Regulations (CFR) § 1.133 Interviews
Paragraph (b)
In every instance where reconsideration is requested in view of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the applicant. An interview does not remove the necessity for reply to Office action as specified in §§ 1.111, 1.135. (35 U.S.C. 132)

37 CFR §1.2 Business to be transacted in writing.
All business with the Patent or Trademark Office should be transacted in writing. The personal attendance of applicants or their attorneys or agents at the Patent and Trademark Office is unnecessary. The action of the Patent and Trademark Office will be based exclusively on the written record in the Office. No attention will be paid to any alleged oral promise, stipulation, or understanding in relation to which there is disagreement or doubt.

The action of the Patent and Trademark Office cannot be based exclusively on the written record in the Office if that record is itself incomplete through the failure to record the substance of interviews.

It is the responsibility of the applicant or the attorney or agent to make the substance of an interview of record in the application file, unless the examiner indicates he or she will do so. It is the examiner's responsibility to see that such a record is made and to correct material inaccuracies which bear directly on the question of patentability.

Examiners must complete an Interview Summary Form for each interview held where a matter of substance has been discussed during the interview by checking the appropriate boxes and filling in the blanks. Discussions regarding only procedural matters, directed solely to restriction requirements for which interview recordation is otherwise provided for in Section 812.01 of the Manual of Patent Examining Procedure, or pointing out typographical errors or unreadable script in Office actions or the like, are excluded from the interview recordation procedures below. Where the substance of an interview is completely recorded in an Examiners Amendment, no separate Interview Summary Record is required.

The Interview Summary Form shall be given an appropriate Paper No., placed in the right hand portion of the file, and listed on the "Contents" section of the file wrapper. In a personal interview, a duplicate of the Form is given to the applicant (or attorney or agent) at the conclusion of the interview. In the case of a telephone or video-conference interview, the copy is mailed to the applicant's correspondence address either with or prior to the next official communication. If additional correspondence from the examiner is not likely before an allowance or if other circumstances dictate, the Form should be mailed promptly after the interview rather than with the next official communication.

The Form provides for recordation of the following information:
- Application Number (Series Code and Serial Number)
- Name of applicant
- Name of examiner
- Date of interview
- Type of interview (telephonic, video-conference, or personal)
- Name of participant(s) (applicant, attorney or agent, examiner, other PTO personnel, etc.)
- An indication whether or not an exhibit was shown or a demonstration conducted
- An identification of the specific prior art discussed
- An indication whether an agreement was reached and if so, a description of the general nature of the agreement (may be by attachment of a copy of amendments or claims agreed as being allowable). Note: Agreement as to allowability is tentative and does not restrict further action by the examiner to the contrary.
- The signature of the examiner who conducted the interview (if Form is not an attachment to a signed Office action)

It is desirable that the examiner orally remind the applicant of his or her obligation to record the substance of the interview of each case. It should be noted, however, that the Interview Summary Form will not normally be considered a complete and proper recordation of the interview unless it includes, or is supplemented by the applicant or the examiner to include, all of the applicable items required below concerning the substance of the interview.

A complete and proper recordation of the substance of any interview should include at least the following applicable items:
1) A brief description of the nature of any exhibit shown or any demonstration conducted,
2) an identification of the claims discussed,
3) an identification of the specific prior art discussed,
4) an identification of the principal proposed amendments of a substantive nature discussed, unless these are already described on the Interview Summary Form completed by the Examiner,
5) a brief identification of the general thrust of the principal arguments presented to the examiner,
   (The identification of arguments need not be lengthy or elaborate. A verbatim or highly detailed description of the arguments is not required. The identification of the arguments is sufficient if the general nature or thrust of the principal arguments made to the examiner can be understood in the context of the application file. Of course, the applicant may desire to emphasize and fully describe those arguments which he or she feels were or might be persuasive to the examiner.)
6) a general indication of any other pertinent matters discussed, and
7) if appropriate, the general results or outcome of the interview unless already described in the Interview Summary Form completed by the examiner.

Examiners are expected to carefully review the applicant's record of the substance of an interview. If the record is not complete and accurate, the examiner will give the applicant an extendable one month time period to correct the record.

Examiner to Check for Accuracy

If the claims are allowable for other reasons of record, the examiner should send a letter setting forth the examiner's version of the statement attributed to him or her. If the record is complete and accurate, the examiner should place the indication, "Interview Record OK" on the paper recording the substance of the interview along with the date and the examiner's initials.

Sisson, Bradley

From: Paul Skwierawski [pskwierawski@antonelli.com]
Sent: Tuesday, November 14, 2006 2:42 PM
To: Sisson, Bradley
Subject: 09/678,652 claims

Examiner Sisson:

Transmitted herewith is an MSWord file containing the proposed amended claims. Rather than canceling claims, I've taken the route of amending the disputed claims (including appropriate dependent claims) to recite "plurality of branched laser multi-spot excitation lights". In claims 28-29 which were the "dual" claims, I've deleted the "multi-spot excitation lights" limitations so that the claims only recite "sheet-shaped excitation lights". Please review the claims and give me a call (703-312-6636) to let me know whether the claims move the application to allowance, or whether the claims need further tweaking. Thanks very much for your help in moving this application to allowance.

Best regards,
Paul Skwierawki

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1. A method of inspecting a coupled state of hybridized target DNA on a DNA chip that includes a plurality of DNA probe cells having a DNA probe to which fluorescently labeled target DNA may hybridize, ones of the DNA probe cells being of a microscopic dimensional size D, where DNA probes are arranged on the DNA chip in a predetermined array, comprising:

after sample exposure/coupling, simultaneously irradiating a plurality of the DNA probe cells of said DNA chip with a corresponding plurality of branched laser multi-spot excitation lights through an objective lens so as to generate fluorescent lights from any fluorescently labeled target DNA hybridized to ones of the DNA probes of the plurality of DNA probe cells;

separating said generated fluorescent lights from said plurality of branched laser multi-spot excitation lights into separate fluorescent lights along separate optical paths; and

detecting said separate fluorescent lights simultaneously with a plurality of sensors, with each sensor corresponding to each of said DNA probe cells irradiated, so as to catalog positions and intensities of detected fluorescent lights which are representative of a coupled state of the hybridized target DNA on said DNA chip.

2. The method as claimed in Claim 1, wherein said plurality of branched laser multi-spot excitation lights are arranged in a 1-dimensional or 2-dimensional configuration.

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3. The method as claimed in Claim 1, comprising:

arranging said plurality of branched laser multi-spot excitation lights irradiated onto said DNA chip on a straight line with a spacing of kd with reference to a spot diameter d and an integer k; and

repeating an operation in sequence k times, said operation being an operation where, after said irradiation with said plurality of branched laser multi-spot excitation lights has been performed, said plurality of branched laser multi-spot excitation lights are displaced in substantially a direction of said straight line by substantially d and said irradiation is performed again; and thereby

executing said inspecting substantially in said straight line direction; and

displacing said DNA chip and said objective lens relatively at least in a direction substantially perpendicular to said straight line direction; and thereby

inspecting a desired 2-dimensional area on said DNA chip.

4. The method as claimed in Claim 1, comprising providing fluorescent light detection deflecting means within said separate optical paths so that said generated fluorescent lights are synchronized with displacement of said plurality of branched laser multi-spot excitation lights and come onto substantially the same location on light-receiving apertures.

5. The method as claimed in Claim 4, wherein said fluorescent light detection deflecting means includes a wavelength selection beam splitter for

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permitting said plurality of branched laser multi-spot excitation lights to pass therethrough and causing said generated fluorescent lights to be reflected.

6. The method as claimed in Claim 1, comprising providing a filter within a fluorescent light detecting optical path isolated from an excitation optical path, said filter permitting only said generated fluorescent lights to pass there-through while light-shielding said plurality of branched laser multi-spot excitation lights.

7. The method as claimed in Claim 1, comprising forming said plurality of branched laser multi-spot excitation lights by using a plurality of laser light-sources.

8. The method as claimed in Claim 7, wherein said plurality of branched laser multi-spot excitation lights are obtained by:

guiding, into optical fibers, lights emitted from said plurality of laser light-sources; and causing said lights to be emitted from light-emitting ends of said optical fibers, said light-emitting ends being aligned with M desired pitches.

9. The method as claimed in Claim 1, wherein said plurality of excitation lights include a plurality of different wavelengths, and the method comprising distinguishing ones of the DNA probe cells as different targets on said DNA chip, where a plurality of fluorescent materials responsive to ones of the plurality of different wavelengths are used to distinguish a plurality of different targets.

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10. The method as claimed in Claim 9, comprising:

performing simultaneous irradiation with said plurality of branched laser multi-spot excitation lights including said plurality of different wavelengths; and thereby

distinguishing said different targets on said DNA chip so as to simultaneously detect said different targets in accordance with said plurality of fluorescent materials.

11. The method as claimed in Claim 1, comprising:

directing a second light with an oblique incident angle on an inspection plane of said DNA chip;

detecting a reflection position at which said second light is reflected on said inspection plane; and

controlling a relative distance between said inspection plane and said objective lens in accordance with a result of detection of said reflection position.

12.-17. (Canceled)

18. A method of inspecting a coupled state of hybridized target DNA on a DNA chip that includes a plurality of DNA probe cells having a DNA probe to which fluorescently labeled target DNA may hybridize, ones of the DNA probe cells being of a microscopic dimensional size D, where DNA probes are arranged on the DNA chip in a predetermined array, comprising:

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branching a laser beam so as to form eight or more beams, said laser beam being emitted from at least one laser light-source;

after sample exposure/coupling, simultaneously irradiating a corresponding eight or more of the DNA probe cells on an inspection plane of a DNA chip with said eight or more beams, respectively, so as to generate fluorescent lights from any fluorescently labeled target DNA hybridized to ones of the DNA probes of the plurality of DNA probe cells;

separating fluorescent lights emitted from irradiated ones of the DNA probe cells of said DNA chip, from reflected lights of said eight or more beams;

detecting said separated fluorescent lights simultaneously with a plurality of sensors, each sensor corresponding to each irradiated said DNA probe cell, respectively; and

getting information from said DNA chip by cataloging position and intensities of detected fluorescent lights which are representative of a coupled state of the hybridized target DNA on said DNA chip.

19. A method of inspecting a coupled state of hybridized target DNA on a DNA chip that includes a plurality of DNA probe cells having a DNA probe to which fluorescently labeled target DNA may hybridize, ones of the DNA probe cells being of a microscopic dimensional size D, where DNA probes are arranged on the DNA chip in a predetermined array, comprising:

branching a laser beam into a plurality of beams having substantially the same intensity, said laser beam being emitted from at least one laser light-source;

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after sample exposure/coupling, simultaneously projecting said plurality of beams onto a corresponding plurality of the DNA probe cells on an inspection plane of the DNA chip through a projection optical unit, so as to generate fluorescent lights from any fluorescently labeled target DNA hybridized to ones of the DNA probes of the plurality of DNA probe cells;

detecting, through an imaging optical unit, images of fluorescent lights emitted from irradiated ones of the DNA probe cells of said DNA chip simultaneously with a plurality of sensors, each sensor corresponding to each irradiated said DNA probe cell, respectively; and

getting information from said DNA chip by cataloging position and intensities of detected fluorescent lights concerning a coupled state of the hybridized target DNA on said DNA chip.

20. The method as claimed in Claim 19, wherein said DNA chip is inspected by irradiating said DNA chip with said beams while displacing said DNA chip and said beams relatively in a 2-dimensional manner.

21. The method as claimed in Claim 19, wherein said DNA chip is irradiated with said beams arranged in 2-dimensions.

22. A method of inspecting a coupled state of hybridized target DNA on a DNA chip that includes a plurality of DNA probe cells having a DNA probe to which fluorescently labeled target DNA may hybridize, ones of the DNA probe cells being

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of a microscopic dimensional size D, where DNA probes are arranged on the DNA chip in a predetermined array, comprising:

after sample exposure/coupling, simultaneously irradiating a plurality of the DNA probe cells of said DNA chip with a corresponding plurality of branched laser multi-spot excitation lights so as to emit fluorescent lights from any fluorescently labeled target DNA hybridized to ones of the DNA probes of the plurality of DNA probe cells;

separating said fluorescent lights emitted from ones of the DNA probe cells of said DNA chip, from said plurality of branched laser multi-spot excitation lights:

detecting images of said fluorescent lights simultaneously by use of a plurality of light detecting devices capable of executing a photon counting, each sensor corresponding to each irradiated said DNA probe cell, respectively;

photon-counting, individually, each photon signal obtained from said respective light detecting devices;

storing, individually, data of photon-counted numbers Npm detected by said respective light detecting devices;

changing positions of said plurality of branched laser multi-spot excitation lights and a position of said DNA chip relatively, so as to store data of said photon-counted numbers from said respective light detecting devices;

collecting stored data on said photon-counted numbers over desired locations on said DNA chip;

constructing a fluorescent light image from said collected data; and

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deriving information for said DNA chip from said collected data, by cataloging positions and intensities of detected fluorescent lights which are representative of a coupled state of the hybridized target DNA on said DNA chip.

23. A method of inspecting a coupled state of hybridized target DNA on a DNA chip that includes a plurality of DNA probe cells having a DNA probe to which fluorescently labeled target DNA may hybridize, ones of the DNA probe cells being of a microscopic dimensional size D, where DNA probes are arranged on the DNA chip in a predetermined array, comprising:

after sample exposure/coupling, simultaneously irradiating a plurality of the DNA probe cells of said DNA chip with a sheet-shaped excitation light so as to emit fluorescent lights from any fluorescently labeled target DNA hybridized to ones of the DNA probes of the plurality of DNA probe cells;

separating said fluorescent lights emitted from ones of the DNA probe cells, from said sheet-shaped excitation lights;

detecting images of said fluorescent lights simultaneously by use of a plurality of light detecting devices capable of executing a photon counting, each sensor corresponding to each irradiated said DNA probe cell, respectively;

photon-counting, individually, each photon signal obtained from said respective light detecting devices;

storing, individually, data of photon-counted numbers Npm detected by said respective light detecting devices;

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changing positions of irradiation areas and a position of said DNA chip relatively, so as to store in sequence data of said photon-counted numbers from said respective light detecting devices; collecting stored data on said photon-counted numbers over desired locations on said DNA chip;

constructing a fluorescent light image from said collected data, and deriving information for said DNA chip from said collected data, by cataloging positions and intensities of detected fluorescent lights which are representative of a coupled state of the hybridized target DNA on said DNA chip.

24. The method as claimed in Claim 22, wherein said branched laser multi-spot excitation lights include 10 or more microscopic spots.

25. The method as claimed in Claim 24, wherein said branched laser multi-spot excitation lights include 50 or more microscopic spots.

26. The method as claimed in Claim 24, wherein said microscopic spots are arranged on a 1-dimensional straight line or a 2-dimensional array.

27. The method as claimed in Claim 22, wherein said branched laser multi-spot excitation lights are colored lights having 2 or more wavelengths.

28. A method of inspecting a coupled state of hybridized target DNA on a DNA chip that includes a plurality of DNA probe cells having a DNA probe to which

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fluorescently labeled target DNA may hybridize, ones of the DNA probe cells being of a microscopic dimensional size D, where DNA probes are arranged on the DNA chip in a predetermined array, by detecting fluorescent lights generated from a fluorescent material on a DNA sample, comprising:

after sample exposure/coupling, simultaneously irradiating a plurality of the DNA probe cells of said DNA chip with ~~a corresponding plurality of multi-spot excitation lights or~~ a sheet-shaped excitation light so as to generate fluorescent lights from any fluorescently labeled target DNA hybridized to ones of the DNA probes of the plurality of DNA probe cells, separating said fluorescent lights from said sheet-shaped excitation light; ~~plurality of multi-spot excitation lights irradiated onto said DNA sample, said multi-spot excitation lights including M microscopic spots, where M is an integer;~~

detecting fluorescent light images from said fluorescent lights emitted from said DNA chip with the use of a plurality of M light detecting devices in an average pixel detecting time of (300 μsec/M) or less, each light detecting device corresponding to each irradiated said DNA probe cell, respectively;

storing, individually, signals obtained from said respective light detecting devices:

changing, relatively, positions of ~~said multi-spot excitation lights or~~ said sheet-shaped excitation light and a position of said DNA chip so as to store said signals in sequence;

collecting said stored signals over desired locations on said DNA chip;

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constructing a fluorescent light image from said collected and stored signals; and

deriving information on said DNA chip from said collected data, by cataloging positions and intensities of detected fluorescent lights which are representative of a coupled state of the hybridized target DNA on said DNA chip.

29. A method of inspecting a coupled state of hybridized target DNA on a DNA chip that includes a plurality of DNA probe cells having a DNA probe to which fluorescently labeled target DNA may hybridize, ones of the DNA probe cells being of a microscopic dimensional size D, where DNA probes are arranged on the DNA chip in a predetermined array, by detecting fluorescent lights generated from a fluorescent material on a DNA sample, comprising:

after sample exposure/coupling, simultaneously irradiating a plurality of the DNA probe cells of said DNA chip with ~~a corresponding plurality of multi-spot excitation lights or~~ a sheet-shaped excitation light so as to generate fluorescent lights from any fluorescently labeled target DNA hybridized to ones of the DNA probes of the plurality of DNA probe cells, separating said fluorescent lights from said sheet-shaped excitation light ~~plurality of multi-spot excitation lights~~ irradiated onto said DNA sample, ~~said multi-spot excitation lights including M microscopic spots having a diameter or focus-achieving width which is smaller than 3 μm and larger than 0.3 μm,~~ said sheet-shaped excitation ~~lights~~ light having a width that is smaller than 3 μm and larger than 0.3 μm; ~~, where M is the number of microscopic spots;~~

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detecting fluorescent light images emitted from said DNA chip simultaneously with use of a plurality of light detecting devices, each sensor corresponding to each irradiated said DNA probe cell, respectively;

storing, individually, signals obtained from said respective light detecting devices; changing, relatively, positions of ~~said multi-spot excitation lights or~~ said sheet-shaped excitation light and a position of said DNA chip so as to store said signals in sequence;

collecting said stored signals over desired locations on said DNA chip; constructing a fluorescent light image from said collected signals; and

deriving information for said DNA chip from said collected data, by cataloging positions and intensities of detected fluorescent lights which are representative of a coupled state of the hybridized target DNA on said DNA chip.

30.-35. (Canceled)

36. The method as claimed in Claim 1, wherein said plurality of the DNA probe cells of said DNA chip are simultaneously irradiated with the corresponding plurality of branched laser multi-spot excitation lights for a time Δt that is longer than a fluorescent light attenuation time.

37. The method as claimed in Claim 1, wherein each light of said branched laser multi-spot excitation lights having a spot diameter d that is smaller than the dimensional size D of a DNA probe cell that it irradiates.

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38. The method as claimed in Claim 18, wherein said eight or more of the DNA probe cells are simultaneously irradiated with said eight or more beams, respectively, for a time Δt that is longer than a fluorescent light attenuation time.

39. The method as claimed in Claim 18, wherein each beam of said eight or more beams having a spot diameter d that is smaller than the dimensional size D of a DNA probe cell that it irradiates.

40. The method as claimed in Claim 19, wherein said plurality of beams are simultaneously projected for a time Δt that is longer than a fluorescent light attenuation time.

41. The method as claimed in Claim 19, wherein each beam having a spot diameter d that is smaller than the dimensional size D of a DNA probe cell that it irradiates.

42. The method as claimed in Claim 22, wherein the plurality of the DNA probe cells are irradiated for a time Δt that is longer than a fluorescent light attenuation time.

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43. The method as claimed in Claim 22, wherein each light of said branched laser multi-spot excitation lights having a spot diameter d that is smaller than the dimensional size D of a DNA probe cell that it irradiates.

44. The method as claimed in Claim 23, wherein the plurality of the DNA probe cells are simultaneously irradiated for a time Δt that is longer than a fluorescent light attenuation time.

45. The method as claimed in Claim 28, wherein the plurality of the DNA probe cells excitation lights are simultaneously irradiated for a time Δt that is longer than a fluorescent light attenuation time.

46. The method as claimed in Claim 29, wherein the plurality of the DNA probe cells are simultaneously irradiated for a time Δt that is longer than a fluorescent light attenuation time.

47. The method as claimed in Claim 23, wherein said sheet-shaped excitation lights are colored lights having 2 or more wavelengths.

48. A method of inspecting a coupled state of hybridized target DNA on a DNA chip that includes a plurality of DNA probe cells having a DNA probe to which fluorescently labeled target DNA may hybridize, ones of the DNA probe cells being

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of a microscopic dimensional size D, where DNA probes are arranged on the DNA chip in a predetermined array, comprising:

after sample exposure/coupling, simultaneously irradiating plural DNA probe cells out of said plurality of DNA probe cells of said DNA chip with a corresponding plurality of branched laser multi-spot excitation lights under a condition that each spot of said branched laser multi-spot excitation lights corresponds to a DNA probe cell through an objective lens so as to generate fluorescent lights from any fluorescently labeled target DNA hybridized to ones of the DNA probes of the plural DNA probe cells;

separating said generated fluorescent lights from said plurality of branched laser multi-spot excitation lights into separate fluorescent lights along separate optical paths; and

detecting said separate fluorescent lights simultaneously with a plurality of sensors, with each sensor corresponding to each of said DNA probe cells irradiated, so as to catalog positions and intensities of detected fluorescent lights which are representative of a coupled state of the hybridized target DNA on said DNA chip.

49. A method of inspecting a coupled state of hybridized target DNA on a DNA chip that includes a plurality of DNA probe cells having a DNA probe to which fluorescently labeled target DNA may hybridize, ones of the DNA probe cells being of a microscopic dimensional size D, where DNA probes are arranged on the DNA chip in a predetermined array, comprising:

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after sample exposure/coupling, simultaneously irradiating a plurality of the DNA probe cells of said DNA chip with a corresponding plurality of branched laser multi-spot excitation lights under a condition that each spot of the branched laser multi-spot excitation lights corresponds to one DNA probe cell through an objective lens so as to generate fluorescent lights from any fluorescently labeled target DNA hybridized to ones of the DNA probes of the plurality of DNA probe cells;

separating said generated fluorescent lights from said plurality of branched laser multi-spot excitation lights into separate fluorescent lights along separate optical paths;

detecting said separate fluorescent lights simultaneously with a corresponding plurality of sensors under a condition that each separate fluorescent light corresponds to one sensor, so as to catalog positions and intensities of detected fluorescent lights which are representative of a coupled state of the hybridized target DNA on said DNA chip.